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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,291	12/06/2001	Kiyoshi Ikehara	Q65012	5099

7590 07/26/2004
SUGHRUE, MION, ZINN, MACPEAK & SEAS
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037

EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/003,291

Applicant(s)

IKEHARA ET AL.

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of a tire having a circumferential belt layer in the reply filed on April 26, 2004 is acknowledged.

Claim Rejections - 35 USC § 103

2. Claims 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caretta (US 5,562,792) and further in view of Miyawaki (US 5,162,067). Caretta and Miyawaki are applied in the same manner as set forth in Paper Number 5.

As best depicted in Figure 1, Caretta teaches a motorcycle tire construction comprising a tread portion, a pair of bead portions, a carcass of one or more plies of radial arrangement, and a belt reinforcement structure 5 having at least one circumferential layer formed of steel cords, wherein said steel cords can be of a single twisting structure (single strand formed of between 2 and 10 filaments) (Column 6, Lines 40-50). Furthermore, Caretta teaches that said steel cords are "high elongation" cords and exhibit a stress/strain relationship that is analogous to that required by the claimed invention (Figure 2 and Column 3, Lines 30-37). In particular, the claims require that the cord exhibits a load/elongation relationship having a linear gentle gradient line, a linear steep gradient, and a curved region therebetween. However, in describing said steel cords, Caretta fails to expressly describe the presence of at least one or more spaces (penetration portions) between filaments over the full length of the cord. In any event, it is well known in the tire industry that it is beneficial to have spaces between

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mutual filaments over the full length of the cord in order to optimize rubber penetration and ultimately improve tire durability. For example, Miyawaki, as compared to Caretta, is directed to an extremely similar high elongation, steel belt cord in which gaps or spaces are maintained between filaments over the full length of the cord to optimize rubber penetration (Column 3, Lines 15-36). It is particularly noted that the spacing of the filaments of the high elongation, steel belt cord of Miyawaki is not affected by the molding/vulcanization forces (tension)- this characteristic allows the rubber to penetrate between filaments upon heating and melting. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to form the high elongation, steel cord of Caretta with the claimed filament spacing for the benefits detailed above. It is emphasized that Caretta does not provide a negative teaching with respect to the claimed filament spacing but rather is completely silent with respect to this aspect of the high elongation, steel belt cord.

Regarding claims 14-20, it is initially noted that the claims suggest, "each steel cord has a tensile force applied thereto being within a load corresponding to an elongation in a linear gentle gradient line" (before inflation to a nominal internal pressure). However, the claims as currently drafted are directed to a pneumatic tire article and this limitation does not further define the structure of the tire but rather pertains to the method of manufacturing the tire. Thus, the claims only require that the cord material used in the belt region exhibit the claimed load/elongation relationship as set forth above.

With respect to claims 15 and 16, it is clearly evident that the amount of tensile force and thus the elongation applied to the belt layer varies between cord constructions (depending on the ultimate elongation of the specific cord). Caretta suggests that the elongation at the centerline of the connecting portion can be, for example, as low as 1.5%. Thus, the actual elongation would be lower than this value because Caretta suggests the relevant force can simply be within the connection portion "EF" (Column 7, Lines 50-60). As such, one of ordinary skill in the art at the time of the invention would have recognized that elongation values in the upper region of the claimed regions would be existent at the beginning of the connecting portion. Also, with specific respect to claim 15, it is well recognized in the tire industry that the expansion of the tire is greater in the central portion of the belt reinforcement as compared to the shoulder portions of the belt reinforcement due to the differences in their respective inner diameters- this is especially the case in a motorcycle tire in which a high camber is present in the belt region (difference between inner diameters is greater).

Regarding claims 17 and 18, one of ordinary skill in the art at the time of the invention would have readily appreciated and expected the connecting portion in Caretta to constitute at least 5%, and furthermore at least 10%, of the elongation at break. Based on the elongation at break, the range has to constitute 0.2% at the minimum and 0.8% at the maximum. It is clearly evident from Figure 2 that the amount of elongation is extremely small in the region outward of the connecting portion (region where cords are needed to be inextensible), wherein a significant amount of the entire elongation is defined by the first portion "OE" and the connecting portion "EF". Thus,

the distance "EF" would be expected to constitute at least 5%, and furthermore at least 10%, of the entire elongation at break. It is further noted that such an arrangement is depicted by Figure 2.

With respect to claim 19, Caretta suggests that the relevant ratio is between 0.15 and 0.45, which incorporate the entire range of the claimed invention (Column 5, Lines 37-45).

Regarding claim 20, while the references fail to expressly address the quantitative relationship of the claimed invention, it is evident, in view of Miyawaki, that a larger cord diameter is desired as compared to that normally associated with the same cord construction. For example, Miyawaki states that the gaps between respective filaments are at least 20% of the filament diameter (Column 5, Lines 30-35). In this instance, Miyawaki describes the cords constructions as having a major diameter that is greater than the conventional open cord constructions of Figure 19, it being recognized that the conventional open cord construction has a diameter greater than the conventional closed cord construction of Figure 18. Thus, it is evident that the cord of Caretta in view of Miyawaki has a significantly large diameter as compared to the conventional cord constructions and one of ordinary skill in the art at the time of the invention would have expected such a cord to satisfy the quantitative relationship of the claimed invention. It appears that the quantitative relationship is attempting to define a cord diameter that is greater than that associated with a conventional open cord construction.

Response to Arguments

3. Applicant's arguments filed April 26, 2004 have been fully considered but they are not persuasive. Applicant contends that Caretta and Miyawaki, taken alone or in combination, fail to teach that a tensile force is applied within a load corresponding to an elongation in a linear gentle gradient line. However, as currently drafted, the claims are directed to a pneumatic tire and not a method of manufacturing a tire. This limitation does not further define the structure of the claimed tire. In each instance (claims and reference), a high elongation cord having the claimed load/elongation relationship is provided in the respective belt regions. Thus, the structure of the claimed tire article and that of Caretta is the same in this regard. While the degree to which the high elongation cords in the claimed invention and Caretta are pre-loaded or pre-stretched might be different, the fact remains that each of the belt assemblies are formed of the same materials and thus represent the same tire construction- the degree of pre-loading or pre-stretching is related to the method of manufacturing the tire.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Justin Fischer

July 20, 2004


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